Spring 2002 Seminar Series

Maine Department of Education and Maine Mathematics and Science Alliance

FORM AND FUNCTION IN ASSESSMENT DESIGN

considerations for the selection, adaptation, and development of assessments

Form and Function in Assessment Design

considerations for the selection, adaptation, and development of assessments

Spring 2002

OUTCOMES

Awareness of the context for Local Assessment System development.

Familiarity with considerations for selecting appropriate assessment tools or models.

Opportunity to explore and apply the considerations to selected examples.

AGENDA

Welcome, review outcomes and agenda, opening activity “KWL”

Setting the Context

Form Follows Function Introduction

Form Follows Function in ASSESSMENT

Inventory of FORMS – assessment tools and techniques

Activity – random vs. deliberate selection of assessments

Cognitive Demand Consideration

Activity – matching performance indicators with assessments

Developmental Level Consideration

Activity – Designing Assessments Considering Developmental Level

Purpose Consideration

Activity – Matching Purpose to Assessment Tool

Form and Function INFORMS Decisions – Doesn’t Make Them

Wrap Up

FORM AND FUNCTION IN ASSESSMENT DESIGN

considerations for the selection, adaptation, & development of assessments

In the left hand column below, jot down what you know or think you know about this topic. How does "function" inform choices about assessment tools and techniques? In the center column, note the things that you hope to get out of this workshop. Later in the session, use the last column to record what you learned.

KNOW THINK I KNOW	WANT TO KNOW	LEARNED

 3 minutes

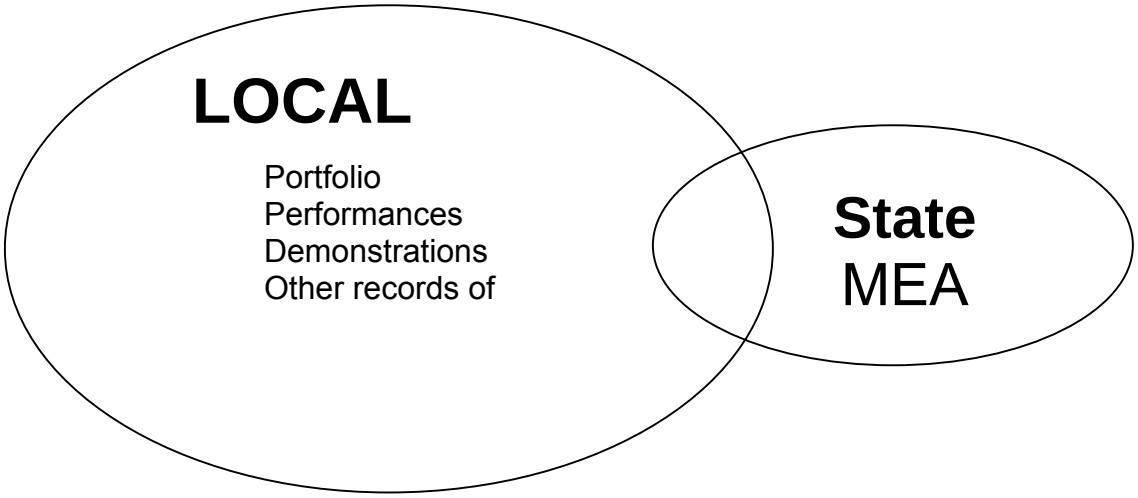
RECOMMENDATIONS FOR ASSESSING MAINE'S LEARNING RESULTS

Background

In March of 1996, the Maine State Legislature adopted the Learning Results to establish education standards that apply to all Maine students educated at public expense. The legislation, *An Act to Initiate Education Reform in Maine*, requires that a system for assessment of student work be established as described in section 8 of the law:

> Student achievement of the Learning Results established in the Revised Maine Statutes, Title 20-A, section 6209, must be measured by a combination of state and local assessments to measure progress and ensure accountability. The 4th, 8th & 11th grade results of the Maine Educational Assessment, the "MEA", are the state assessments used to measure achievement of the Learning Results. The 4th grade and the 8th grade MEA must be used to measure achievement beginning in the 1998-99 school year. The 11th grade MEA must be used to measure achievement of the Learning Results beginning in the 1999-2000 school year. Local school administrative units may develop additional assessments to measure achievement of the Learning Results, including student portfolios, performances, demonstrations, and other records of achievements.

Maine's Assessment System



Three Purposes of Maine's Assessment System

1. To inform teaching and learning regarding student achievement of the Learning Results

- ❑ **Assessments must actually measure the standards**
- ❑ **Assessments must provide the teacher and students with enough information to change how each student and all students are taught**
- ❑ **Assessments produce timely results**
- ❑ **Assessments coordinate with and complement curriculum**

2. To monitor and hold units accountable for student achievement of the standards

- ❑ **Assessments must actually measure the standards**
- ❑ **Assessments must provide clear information about opportunity for all students to learn and to demonstrate in appropriate ways**
- ❑ **Assessment must provide <u>actionable</u> information, rich and complex enough to allow districts to take steps to improve teaching and learning**

3. To certify achievement of the standards

- ❑ **Assessments must actually measure the standards**
- ❑ **Assessments must be designed to leave no question about the extent of student achievement of the standards**
- ❑ **Assessments must be scrupulously fair to the learning needs and conditions of each and all students as well as providing multiple opportunities and multiple ways for students to demonstrate what they know and can do over time**

Characteristics

Maine's Assessment System Should:

- Align with Maine's *Learning Results*
- Utilize Multiple Measures of Learning
- Ensure Fair Assessment for All Students
- Utilize Recognized, Relevant Technical Standards for Assessment
- Provide Understandable Information to Educators, Parents, Students, Public and Media
- Provide Professional Development Opportunities for Teachers, Administrators and Future Educators
- Be Practical and Manageable

Draft Standards for Local Assessment Systems
Maine Department of Education

1. Each assessment in the Local Assessment System meets the standards specified below.

1a. Identifies the content standard and grade span addressed in the assessment.

1b. Is developmentally appropriate for the grade span and part of a continuum across grade spans for that standard.

1c. Provides all students with fair opportunity to demonstrate knowledge and understanding

1d. Meets the requirements of validity:

- The assessment is aligned with Learning Results content standards;
- The assessment is fair to all students;
- The assessment specifies the method used to ensure validity, with a rationale for any method used other than those described in "Measured Measures;" and
- Accommodations are specified that maintain validity of the assessment, with clear guidelines for use of those accommodations.

1e. Meets the requirements of reliability, specifying the method used to ensure reliability, with a rationale for any method used other than those described in "Measured Measures."

1f. Has established performance standards:

- Specifies the method used to establish performance standards, with a rationale for any method used other than those described in "Measured Measures;"
- Specifies who was involved in setting performance standards; and
- Specifies the process for revising performance standards.

2. There are multiple measures of student performance for each content area and for each grade span, sufficient to provide the results specified below, with criteria for selecting the type and range of measures, and for aligning the multiple measures with the content standards.

3. Each assessment system model will include at least the following levels of assessments: classroom, school, and school administrative unit. Models may include regional and commercially produced assessments.

4. The role of the Maine Education Assessment (MEA) is explicitly stated. Neither the MEA nor a commercially produced test can be the only measure of student achievement.

5. Alternate assessment is a component of the Local Assessment System, with clear guidelines for participation in alternate assessment.

6. The mechanism for managing the data produced in the Local Assessment System is clearly described and well coordinated.

7. The Local Assessment System is determined to be valid, to be reliable and to have specified performance standards. This will include an explanation for how results are aggregated up in the school unit.

8. Professional development for school personnel is adequate for developing, using, and adapting assessments.

9. The communications strategy ensures understanding of results by students, parents, and citizens in addition to educators.

~~REQUIREMENTS~~

~~REGULATIONS~~

~~PROCEDURES~~

~~PROTOCOLS~~

CONSIDERATIONS✓

“FORM EVER FOLLOWS FUNCTION”

LOUIS HENRI SULLIVAN

19th Century Chicago Architect
one of Frank Lloyd Wright’s early teachers

The Primary Purpose of Assessment is to Improve Student Learning

PRINCIPLE 1
Principles and Indicators for Student Assessment Systems
National Forum on Assessment

Assessment for Other Purposes Supports Student Learning

PRINCIPLE 2
Principles and Indicators for Student Assessment Systems
National Forum on Assessment

FOUR CATAGORIES OF EXAMPLES OF FORM FOLLOWS FUNCTION

TABLES	***CHAIRS***
BUILDINGS	***SPORTS BALLS***

As much as possible…

Developing and Scoring Assessments Should Enhance Teaching and Doing Assessments Should Enhance Learning

What **FORM** should an assessment take? Which particular tool, method or strategy should be used? How much openness should an assessment have? How much prompting or scaffolding should be provided? How thorough and formal should the documentation be?

To answer these questions about the **FORM** of an assessment, consider the **FUNCTION**.

WHAT is being assessed?
Consider the expectations of the performance indicator. (page 18)

WHO is being assessed?
Consider the developmental level of the students. (page 22)

WHY is the assessment being done?
Consider the way(s) in which the assessment information will be used. (page 26)

VALIDITY = "MATCH"

ASSESSMENTS & STANDARDS*
*WHAT is being assessed

ASSESSMENTS & CURRICULUM

ASSESSMENTS & INSTRUCTION

ASSESSMENTS & STUDENTS*
*WHO is being assessed

ASSESSMENTS AND PURPOSES*
*WHY is the assessment being done?

RELIABILITY = CONSISTENCY

CONSISTENCY AMONG SCORERS

CONSISTENCY WITHIN ASSESSMENTS

CONSISTENCY AMONG ASSESSMENTS

PATTERNS OF PERFORMANCE

Function: What are the expectations of the performance indicator?

Look in Maine's *Learning Results* and find a performance indicator in your discipline that could not be assessed using only paper and pencil.

Be prepared to explain why you selected that indicator.

 5 minutes

INVENTORY OF FORMS

In your group, list all of the assessment tools or techniques that you use or are familiar with, keeping in mind the diversity among students.

Create a set of index cards with one assessment type per card.

◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆ ◆

Check your set against "Framework of Assessment Approaches and Methods" and make additional cards if you wish.

Now look through all of your cards. Are there students who need other forms of assessment? If you can think of some, make additional cards.

🕑	20 minutes start time: end:

Framework of Assessment Approaches and Methods
How might we assess student learning in the classroom?

<table>
<tr><td>Selected-Response Format</td><td colspan="4">Constructed-Response Format</td></tr>
<tr><td rowspan="2">□ Multiple choice

□ True-False

□ Matching

□ Enhanced multiple choice

□ Answer “yes” or “no” to constructed questions

□ Point to a picture, photo, or symbol

□ Use eye gaze to choose from response options</td><td>Brief Constructed Response</td><td colspan="3">Performance-Based Assessment</td></tr>
<tr><td>□ Fill in the blank
• Word (s)
• Phrases(s)

□ Short answer
• Sentence(s)
• Paragraphs

□ Label a diagram

□ “Show your work”

□ Visual representation
• Web
• Concept map
• Flow chart
• Graph/table
• Illustration</td><td>Product

□ Essay

□ Research paper

□ Story/play

□ Poem

□ Art exhibit

□ Science project

□ Model

□ Video/audiotape

□ Spreadsheet

□ Lab Report

□ Log/journal

□ Picture or symbol communication board

□ Portfolio</td><td>Performance

□ Oral Presentation

□ Dance/movement

□ Science lab demonstration

□ Athletic skills performance

□ Dramatic reading

□ Enactment

□ Debate

□ Musical recital

□ Keyboarding

□ Teach-a-lesson

□ Oral or sign language presentation

□ Display activated by a series of switches</td><td>Process-Focused Assessment

□ Oral questioning

□ Observation (“kid watching”)

□ Interview

□ Conference

□ Process description

□ “Think aloud”

□ Learning log</td></tr>
</table>

Adapted from: Assessing Learning in the Classroom, Jay McTighe and Steven Ferrara, NEA 1998

Random vs. Purposeful Selection of Assessment

Look at the performance indicator that is given to you.

Select one of your assessment cards randomly. Will that be a good way to assess the indicator? Why or why not?

Now, purposefully select an assessment for the indicator. Why is it a good choice?

15 minute activity	start time:
15 minute discussion	end:

FORM AND FUNCTION
Considering Cognitive Demand

FUNCTION: <u>What</u> is being assessed?
Consider the expectations of the performance indicator.

Rule of Thumb
As the cognitive demand of the performance indicator increases, the openness and complexity of the assessment should increase.

FUNCTION: COGNITIVE DEMAND ----------➔

FORM: OPENNESS AND COMPLEXITY ----------➔

FORM AND FUNCTION
Considering Cognitive Demand

Which of these two performance indicators seems better suited to a multiple choice or short answer question? Why?

Science and Technology D. Continuity and Change Grades 3-4

#1 Identify (present day organisms that have not always existed and) past life forms that have become extinct.

QUESTION

Which of the following is extinct?

A. lions
B. Bengal tigers
C. Bears
D. Dodo birds

Science and Technology B. Ecology Grades 3-4

#2 Compare and contrast physical and living components of different biomes.

QUESTION

How are a rainforest and an ocean alike?

A. They both have big trees.
B. They both have rich soil.
C. The both have lots of moisture.
D. They both have plankton.

BLOOM'S TAXONOMY

KNOWLEDGE – to recall and recognize
COMPREHENSION – to translate from one form to another
APPLICATION – to apply or use information in a new situation
ANALYSIS – to examine a complex and break it down into its parts
SYNTHESIS – to put together information in a unique or novel way to solve a problem
EVALUATION – to make a judgment about something in light of some criteria

WHAT LEARNERS WILL DO TO DEMONSTRATE:

KNOWLEDGE	COMPREHENSION	APPLICATION	ANALYSIS	SYNTHESIS	EVALUATION
define	translate	interpret	distinguish	compose	judge
repeat	restate	apply	analyze	plan	appraise
record	discuss	employ	differentiate	propose	evaluate
list	describe	use	calculate	design	rate
recall	recognize	demonstrate	experiment	formulate	compare
name	explain	dramatize	test	arrange	value
relate	express	practice	compare	assemble	revise
underline	identify	illustrate	contrast	collect	score
	locate	operate	criticize	construct	select
	report	schedule	diagram	create	choose
	review	shop	inspect	set up	assess
	tell	sketch	debate	organize	estimate
			inventory	manage	measure
			question	prepare	
			relate		
			solve		
			examine		
			categorize		

Considering Cognitive Demand

Find a performance indicator in your discipline that is written at the "knowledge" or "comprehension" level. (use Bloom's word list as reference)

Would a multiple choice or short answer question be suitable for assessing it?
Why or why not?

Find a performance indicator in your discipline that is written at the analysis or synthesis level. Look through your "deck" of assessment types. What types of assessment would be appropriate for assessing the indicator? Why?

15 minute activity	start time:
15 minute discussion	end:

FORM AND FUNCTION
Considering Cognitive Demand

FUNCTION: Who is being assessed?
Consider the developmental level of the students.

Rule of Thumb

As the developmental level of the student increases, the independence of the assessment, the student's responsibility for documentation, and the scope of the assessment increases, while the amount of prompting decreases.

FUNCTION: DEVELOPMENTAL LEVEL ----------➔

FORM:

INDEPENDENCE OF COMMUNICATION ----------➔

STUDENT RESPONSIBILITY FOR DOCUMENTATION -➔

SCOPE OF ASSESSMENTS ----------➔

➔---------- EXTENT OF PROMPTING

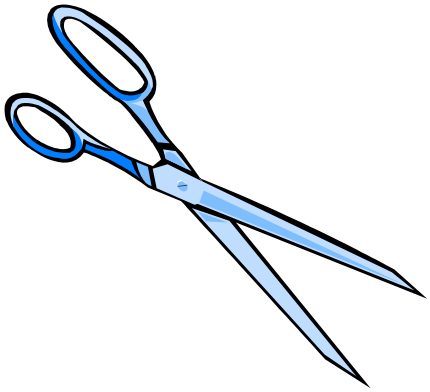
NOTE: ASSESSMENTS SHOULD BE BOTH DEVELOPMENTALLY APPROPRIATE AND AGE APPROPRIATE

FORM AND FUNCTION
Considering Developmental Level

Young children and adults both use scissors to cut paper.

To the extent that the function is the same (cutting paper), the form is the same (scissors).

To the extent that young children and adults are different, in terms of hand size, motor skills, safety consciousness, etc., the form is different. Primary scissors are small, relatively blunt, and have rounded ends. Adult scissors are larger, can be extremely sharp, and usually have pointed ends.



FORM AND FUNCTION
Considering Developmental Level

Visual and Performing Arts
A. Creative Expression

Primary Grades PreK-2
#6 Perform (and/or listen) to a number of pieces [of music] on a given theme and create a variation.

Middle Grades 5-8
#8 Perform a variety of styles and types of music (dance, and theater.)

Students at both levels will be performing music but because of their differing levels of maturity, they will be using different instruments and or different musical selections.

EXAMPLE
Primary students might use a variety of percussion instruments (wood blocks, tambourine, maracas, etc.) to perform various rhythms and their variations. Middle level students might play a piece of contemporary music and a classical piece on an band or orchestra instrument.

FORM AND FUNCTION
Considering Developmental Level

Look at the pair of performance indicators on your index card.

Look through your "deck" of assessment types. Thinking about students' developmental level, select one or more assessment methods that would be appropriate for each indicator.

If you chose the same assessment method, how do the details differ? If you chose different assessment methods, why?

🕑	15 minute activity	start time:
	15 minute discussion	end:

FORM AND FUNCTION
Considering The Purpose For Assessment

FUNCTION: **<u>Why</u> is the assessment being done?**
Consider the way(s) in which the assessment information will be used.

Rule of Thumb
The more formal the purpose for assessment, and the more significant the consequences, the more documentation (for external review) and reliability are necessary.

FUNCTION: FORMALITY AND CONSEQUENCES ----------➔

EXAMPLES:

checking in for understanding of new topic	giving a grade	promotion/retention

FORM:

DOCUMENTATION ----------➔

RELIABILITY----------➔

EXAMPLES:

observation with ✓,✓+, ✓-	rubric scoring	rubric with inter-rater agreement

FORM AND FUNCTION
considering purpose

WHICH OF THE FOLLOWING PURPOSES WOULD THE "KWL" BE APPROPRIATE FOR?

Feedback to facilitators to inform planning subsequent sessions.

Information to grant graduate credit to participants.

Information to determine the amount to pay the facilitators.

FORM AND FUNCTION
Considering Purpose

LOOK AT THE SCENARIO ON YOUR INDEX CARD.

DESCRIBE AN APPROPRIATE PLAN FOR SCORING AND DOCUMENTATION.

10 minute activity	start time:
10 minute discussion	end:

Form & Function considerations INFORM decisions about assessment, but don't make them.

FORM AND FUNCTION IN ASSESSMENT DESIGN
Considerations for the selection, adaptation, and development of assessments

Contact Information

Name	Content Area	E Mail Address	Phone Number
Baker, Mona	Alternate Assessment	Mona.Baker@state.me.us	624-6825
Cadigan, David	Visual & Performing Arts	David.Cadigan@state.me.us	624-6636
Cottrell, Marsha	Distinguished Educator	Marsha.Cottrell@state.me.us	624-6783
Doiron, Diana	English Language Arts	Diana.Doiron@state.me.us	624-6823
Hatch, Denice	Distinguished Educator	Denice.Hatch@state.me.us	624-6786
Hupp, Dan	Mathematics	Dan.Hupp@state.me.us	624-6827
Johnston, Tad	Mathematics	Tad.Johnston@state.me.us	624-6829
Keller, Tom	Science	Tom.Keller@state.me.us	624-6828
Manter, Connie	Social Studies	Connie.Manter@state.me.us	624-6824
Monthly, Wanda	Gifted/Talented AP	Wanda.Monthly@state.me.us	624-6831
Morgan, Grace	Health Education	Grace.Morgan@state.me.us	624-6695
Reutershan, Don	Modern & Classical Lang	Don.Reutershan@state.me.us	624-6826
Rolfe, Pam	ELA/ Local Assessment	Pam.Rolfe@state.me.us	624-6785
Rosenblum, Jill	Math/Science/Assessment	jrosenblum@mmsa.org	287-5881
Sanders, Estelle	English Language Arts	Estelle.Sanders@state.me.us	624-6625
Seaberg, Valerie	Education Team Leader	Valerie.Seaberg@state.me.us	624-6834
Smith, Susan	Assessment- State &Local	Susan.Smith@state.me.us	624-6775
Stivers, John	Career Preparation	John.Stivers@state.me.us	624-6745
Swan, Stephanie	Health Education	Stephanie.Swan@state.me.us	624-6697
Wilbur, Katherine	Health Education	Katherine.Wilbur@state.me.us	624-6696